

Application No. 09/800,977  
Amendment After Final Rejection dated May 10, 2005  
Reply to Final Rejection of November 10, 2004

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listing, of claims in the application.

**Listing of Claims:**

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
9. (Cancelled)
10. (Cancelled)
11. (Cancelled)
12. (Cancelled)
13. (Cancelled)
14. (Cancelled)
15. (Cancelled)
16. (Cancelled)
17. (Cancelled)
18. (Cancelled)

19. (Previously Amended) A method for providing a reference library of representative sets of correlated values for use in monitoring a system using an empirical model, comprising the steps of:

receiving a variable signal measuring a parameter of said system during operation of said system in a known mode;

decomposing said variable signal into component signals;

sampling said component signals periodically to provide successive sets of correlated values; and

selecting some of said sets of correlated values for inclusion in said reference library and including a particular set of correlated values if said particular set includes a minimum or a maximum value of one of the correlated values, as compared to all like values in all the sets of correlated values.

20. (Original) A method according to claim 19, wherein said decomposing step comprises transforming said variable signal with a discrete wavelet transformation to produce component signals comprising successive wavelet coefficients.

21. (Original) A method according to claim 19, wherein said decomposing step comprises filtering said variable signal with a plurality of frequency bandpass filters to produce component signals for each band of frequencies.

22. (Original) A method according to claim 19, further comprising storing in said reference library a classification with a selected set of correlated values, associated with a known state of the variable signal.

- 23. (Cancelled)
- 24. (Cancelled)
- 25. (Cancelled)
- 26. (Cancelled)
- 27. (Cancelled)
- 28. (Cancelled)

29. (Previously Amended) A method of extracting information from a complex signal, said method comprising the steps of:

- a) receiving a complex signal, said complex signal carrying data therein;
- b) periodically decomposing said received complex signal into a plurality of components;
- c) comparing for similarity said components against a plurality of snapshots in a storage set of historical components, by rendering a value for each pair of corresponding components as a function of the difference between the pair and as a function of the expected range of variation for such component;
- d) averaging comparison results from comparing said components against said snapshots, said average comparison results providing an indication of information in said complex signal.

30. (Original) A method of extracting information as in claim 29, wherein the step (b) of periodically decomposing said received complex signal comprises extracting wavelet detail levels from said complex signal.

31. (Original) A method of extracting information as in claim 29, wherein the comparison step (c) comprises applying a bounded area ratio test to each of said plurality of components, each component being compared against a corresponding component in each of the plurality of snapshots.

32. (Currently Amended) A method of extracting information as in claim ~~[[31]]~~-29, said method further comprising the steps of:

- e) identifying a matching historical signature vector among said plurality of snapshots responsive to said average comparison results; and
- f) outputting a digital result corresponding to said identified matching historical signature vector.

33. (Currently Amended) A method of extracting information as in claim ~~[[31]]~~ 29, said complex signal being generated responsive to a system being monitored, said method further comprising the steps of:

- e) generating an expected signal result from averaged said comparison results;
- f) generating a residual from said expected signal result and said decomposed received complex signal; and
- g) testing said residual to determine whether said expected signal result is different from said received complex signal.

34. (Original) A method of extracting information as in claim 33 further comprising the step of:

- h) diagnosing a state of said monitored system responsive to said determination of step (g).

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- 35. (Cancelled)
- 36. (Cancelled)
- 37. (Cancelled)
- 38. (Cancelled)
- 39. (Cancelled)
- 40. (Cancelled)
- 41. (Cancelled)
- 42. (Cancelled)
- 43. (Cancelled)
- 44. (Cancelled)
- 45. (Cancelled)
- 46. (Cancelled)